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153 184 In times of relaxation, of prayer for or rejoicing over good harvests and rain, vagrancy of thought going out into daydreams or songs is apparently not only permissible but respected as being close to nature and its spirit. Western Papago who are able to solve complex formal and organizational problems perform such tasks through mental activity which seems to lie outside that normally required for their daily life.

153 184 177 The eastern Papago communities, on the other hand, have been for a long time exposed to outside influences. In the old days Apache raids were comparatively frequent and demanded constant watchfulness and readiness for defense. There are now other elements that influence the eastern way of life: two Catholic missions and schools, one Presbyterian mission and school, one government school, and, only ten to twenty miles away from the several communities, the Reservation headquarters, which is also the seat of the tribal council and court. Mexico, "just across the mountains," is frequently visited. Thus, life in this area has certain more complex and formal aspects, the mastery of which stimulate mental activity beyond the simplicity of the West, into the direction of greater intellectual alertness and greater ability to differentiate and to organize complex tasks.

153 Making a decision as to the actual effects of these factors on the I.Q. of Papago children seems obviously impossible, particularly if it is to be based on the results of one test. However, the other intelligence test used in the research, the Goodenough Draw-a-Man, has given findings which to a degree support the considerations discussed above. According to this test, the average I.Q. of Eastern Papago children is 108.5, that of the western Papago 103.6 (see Table 3). The average I.Q. achieved by the Papago children of both areas on the Goodenough test is higher than that obtained by white children on whom the test was standardized (100.0) and by a group of white children from a midwestern town (101.2).

151 153 The mental capacities taken into account for the calculation of an I.Q. in the Goodenough Draw-a-Man Test are apparently different from those playing a role in the Grace Arthur test. The old fame of Indians as scouts—a fame which has repeatedly been confirmed in the recent war—indicates alertness and attention to significant details, the chief traits scored in the Goodenough test.

The following incident may illustrate the nature and degree of Papago children's gift for observation. One of the Reservation [illegible] nurses took a group of small Papago children for a few hours to the Agency seat for medical examinations. Some time later a teacher asked the children to draw pictures of the hospital. Almost all showed certain details which appeared to the teacher

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and the nurse, who knew the hospital well, to be out of place or even invented. On their next trip they checked these details and found to their surprise that the children had been correct.

In this case the specific way of life in which the children are trained has apparently stimulated a particular mental activity and furthered its development. It cannot be assumed by analogy that the same factor played a negative role in the Grace Arthur test, but the results of the Goodenough nevertheless seem to support this possibility, because children of actual dull normal intelligence (as an I.Q. of 86.8 would imply among whites) could hardly achieve,

TABLE 3

AVERAGE I.Q.'S SCORED BY PAPAGO CHILDREN OF TWO AREAS ON TWO INTELLIGENCE TESTS

	Average I.Q.	
Area	Arthur Test*	Goodenough Test†
Eastern	99.4	108.5
Western	86.9	103.6

* Children aged six through fifteen years. Source: Robert J. Havighurst and Rhea R. Hilkevitch, "The Intelligence of Indian Children as Measured by a Performance Scale," *Journal of Abnormal and Social Psychology*, XXXIX (1944), 427. If only the children of six through eleven were included, as in the Goodenough test, the Arthur I.Q.'s would average 99.7 for the eastern children and 87.5 for the western.

† Children aged six through eleven years. Source: Robert J. Havighurst, Minna Koteł, and Inez Pratt, "Environment and the Draw-a-Man Test: The Performance of Indian Children," *Journal of Abnormal and Social Psychology*, XLI (1946), 50–63.

even through specialized training, a nonmechanical skill of detailed observation to the degree shown by the western Papago children in the Goodenough test.

With regard to the supposedly negative influence of the western Papago attitudes toward whites, it should be noted that the situation during the administration of the Goodenough test was actually less provoking than that of the Arthur. The latter was given to each child alone by a white teacher unknown to him; the Goodenough test was administered to groups of varying size by a teacher or by an anthropologist, both of whom were familiar to the children at least by sight and by sporadic contacts.

Later it will be shown that still another test (the Rorschach) supplies information about mental activity and that its results seem to agree with the assumption that specific conditions may have lowered the I.Q. of western Papago children on the Arthur test.

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NOTES ON PAPAGO COLOR DESIGNATIONS

By LILA M. O'NEALE AND JUAN DOLORES

FROM the thousands of printed pages on the subject of color in its various aspects, and the seemingly limitless number of intergradations of hues made possible through continued advancements in dyeing and printing, three simple facts emerge: each hue has a name; each is light or dark; and each is pure or dull.

Modern industries have inundated us with logical and fantastic color names, but most of them can be exchanged for those which indicate with reasonable accuracy the relative amounts of the primary and secondary colors: red, yellow, blue, orange, green, and purple. A familiar color chart used by many students contains eighteen hues. Each hue may be represented by any one of its values ranging from tints so light that they approach white to shades so dark that they approach black. The light-to-dark scale is usually shown in five or seven steps. Each tint or shade of any color may, in turn, be full strength, pure, or it may be dull, approximating neutral gray in which none of the original color is present. The purity, saturation, or intensity scale is also shown in steps, usually nine.

Notes on the color designations in use among a people who have had no incentives to decorate their houses, to attract attention through advertising, or to exercise personal choice in assembling garments for a variety of social demands, are automatically reduced to comparatively simple terms. The Papago list of designations represents a limited color range. Specific words for whole groups like the blues and purples are lacking, as may be seen by the schematic chart. Nothing in the desert region furnishes dyes for such colors, although it is evident that one native word suffices to cover analogous hues as in the case of some blues, greens, and grays. Under such circumstances the color designation is not confused in the speaker's mind with the actual color of the object. Both he and his Papago listener know what possibilities and extensions of a literal meaning are incorporated in the name. This statement can be completely understood only through knowledge of the language.

Because natural sources for colors and uses for pigments are limited among the Papago, there is a conspicuous lack of illustrations for certain concepts which have developed and attached themselves to many of our standard colors, and have added significance to them. Symbolic meanings are only one phase of this significance. Colors are frequently referred to as warm or cool, advancing or retreating, heavy or light, attractive or ugly, sombre, youthful, dramatic, gay, and the like. The Papago do not endow the colors around them with comparable attributes. Even their comment upon a beautiful field or vista may or may not have to do with its actual coloring. A "beautiful country" (*skeke tcewe'ṭ*) is also a "good country." The expression implies that an abundance of rain has resulted in plenty, fruitfulness, and the comment is made in appreciа-

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PAPAGO COLOR DESIGNATIONS

	"Albino"	Hue Name	"Very"	"Very Dark"
White	cahstoha	toha	sihstoha	
Black	cahstcu'ki[1]	tcu'ki	sihstcu'ki	
Muddy	cahsepitema'ki	pi'tema'ki	sihsepitema'ki	stcu'kema spitema'ki
Gray	cahskoma'ki	koma'ki[2]	sihskoma'ki	
Greenish Gray		stcete'kima skoma'ki[3]		
Gray (of hair)		skaima'ki		
Gray (of hair)		smohta'ki		
Ashen	cahsemahtaima'ki	mahtaima'ki[4]	sihsemahtaima'ki	
Smoky	cahskupe'tuhvi	kupe'tcuhvi	sihskupe'tuhvi	
Greasy[5]	cahsmuhṭa'ki	muhata'ki	sihsmuhṭa'ki	stcu'kema smuhṭa'ki
Red	cahswe'ki; swe'kumki[6]	we'ki[7]	sihswe'ki	stcu'kema swe'ki[8]
Yellowish Red		soamma swe'ki[9]		
Yellow	cahscoaki[10]	coaki[11]	sihscoaki[12]	
Green	cahstceta'ki[13]	stceta'ki[14]	sihstceta'ki[15]	stcu'kema stceta'ki[16]
Grayish Green		skoma'kime stceta'ki[17]		
Pari Color[18]	cahsipaima'ki	ipaima'ki	sihsipaima'ki	

Several of the Papago color designations represent hues recognisable by names in familiar usage; others approximate hues shown in Milton Bradley's *Studio Book of Colored Papers*.

1. Similar to dark greenish-brown.
2. Similar to very light khaki; also to very light turquoise green.
3. Approximately yellow-green, Tint no. 2.
4. Approximately neutral gray, no. 1.
5. Similar to drab or fawn; approximately yellow-orange (dark).
6. Approximately red, Tint no. 2, and orange-red, Tint no. 2.
7. Approximately medium red.
8. Approximately red, Shade nos. 1 and 2.
9. Approximately orange-red, Tint no. 1; similar to scarlet.
10. Approximately yellow, Tint no. 2, and yellow-orange, Tint no. 2.
11. Approximately medium yellow-orange, and medium orange.
12. Approximately yellow-orange, Shade no. 2.
13. Approximately green, Tint no. 2, and blue, Tint no. 1.
14. Approximately green, Tint no. 1; yellow-green, Shade no. 2, and medium blue.
15. Approximately medium green.
16. Similar to bottle green.
17. Approximately green-blue, Shade no. 1.
18. Similar to crimson.

tion of that fact. Cultivated flowers in a desert land are colorful by contrast with their surroundings, but they may have been planted because they represented something rare, or were an achievement in gardening rather than because they in themselves were beautiful in the accepted sense of the word. Without doubt such opinions are open to argument, but there are available analogies to warrant recognition of the less-frequently expressed point of view.

Although classifying a color as unattractive is solely dependent upon personal tastes, our so-called muddy browns do appear to be in that category with

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When a Papago is a little lighter than the others, his complexion may be spoken of as white, not implying mixed blood, but only that his skin color by contrast with the usual dark skin is relatively light.

toha is also used to describe the change in appearance due to terror or panic:

alih ʔo'tesi'tɛ'kɛ sih tohah

(The) child being frightened very much became white.

In such instances, the word is not used literally, but signifies that the skin color is unnatural.

The rain clouds in the east are white clouds, *stotah ʔceva'*ki.

*Black. cahsʔcu'*kɛ, almost black; *ʔcu'*kɛ, black; *sihsʔcu'*kɛ, very black. The blackest paint (*ʔcu'*kɛ) used by the Papago is made by rubbing a black rock on a harder rock. As with white, the designations are used to express relative degrees of darkness, but not necessarily the total absence of color. A very dark greenish-brown object was chosen to identify *cahsʔcu'*kɛ. The hair of a young girl is *sʔcu'*kɛ, but any of the three degrees of blackness may be used to describe the color of horses.

There is no single Papago word for glossy, a surface appearance which seems to render blacks even blacker. A comparable meaning is conveyed by a phrase in which the horse is said to be *sva'ʔe'kame'swe'*ki (wet red) or *sva'ʔe'kame'sʔcu'*kɛ (wet black). *va'*kɛ, wet, combined with the color name indicates that the color shines or glistens as when a horse is coming out of the water.

Tucson, Arizona, takes its name from the Papago phrase *ʔcu'*kɛ *con*, black bottom. In times of high water there was once a small lake at the foot of the little peak west of the city. Rubbish washed down the sides, got caught in the lake, and decayed there. As the water gradually dried up, the black bottom was exposed.

*Muddy. cahsepitema'*ki, almost muddy color; *pi'tema'*ki, muddy color; *sihsepitema'*ki, very muddy color; *sʔcu'hema spi'tema'*ki, very dark muddy color. The raw clay used for making pottery is *pi'*t, although properly speaking *pi'*t is mud.

Muddy color must be interpreted with regard for its meaning in the sentence. The phrase "muddy-colored horse" may mean that its color is *spi'tema'*ki, or the phrase may mean that mud covers the horse giving it a temporary coloring. This difference in meaning is unmistakable to the Papago.

The rain clouds in the south are muddy clouds, *spi'tema'*ki *ceva'*ki.

*Gray. cahskoma'*ki, almost gray; *koma'*ki, gray; *sihskoma'*ki, very gray; *sʔceʔe'hima skoma'*ki, gray-with-some-green-in-it (greenish-gray); and *smohta'*ki, the gray of hair. The earth, the sky, the ocean, and the distant mountains are spoken of either as *skoma'*ki (gray) or *sʔceta'*ki (green). One mountain is named Gray mountain, *koma'hi to'o'*kɛ, and an old place, now a village, is

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*koma'ki tcewe'*TE, Gray Earth. The arrow weed which grows along the river in the reservation is called *ko'koma'*KI *u'u'uhs*, gray sticks, by the Pima. At a certain time of the year it is said that the cold northern winds make one's face *skoma'*KI. A man is also *skoma'*KI when he has been out in the wind and the dust has gathered on him. The rain clouds in the north are *skokema'*KI *tceva'*KI.

There are four words used to describe gray or graying hair: *koma'*KI and *cahskoma'*KI, *skaima'*KI, and *smohta'*KI. The first two words apply to hair which is no longer black, and yet not wholly white. They may also be used in connection with other objects of similar color. At a certain stage of the hair turning white, the head looks to the Papago like ground cactus seeds, *kai'*TCI. The kernel is white, but the bits of crushed black shell in the mixture give the whole an appearance of gray, or *skaima'*KI.

*smohta'*KI describes gray hair in which there is more white than black. *mo'o* is the head or the hair on the head. Therefore, *smohta'*KI means graying hair on the head. The word is used only in this connection.

*Ashen. cahsemahtaima'*KI, almost the color of ashes; *mahtaima'*KI, ash color; *sihsemahtaima'*KI, very much the color of ashes.

Although this color is between white and gray, and *koma'*KI might be used for light gray, no Papago would fail to differentiate between *mahtaima'*KI and *koma'*KI. In every instance where he uses the first color designation he understands its meaning. The word is derived for *mahta*I, ashes. The term does not describe the actual color of an object, but its appearance when covered with ashes. If pots or clothes are heavily covered with ashes, the resultant grayness is *sihsemahtaima'*KI. The meaning of the sentence when these words are used is quite clear to the listener. There seems to be no object whose real color is termed ashen.

*Smoky. cahskupe'tuh*VI, almost smoky color; *kupe'tcuh*VI, smoky color; *sihskupe'tuh*VI, very smoky color. This color name describes those objects and utensils which are discolored by smoke. The word is also used to describe the color of pottery which has been subjected to uneven heat in the process of firing.

Greasy (corresponds to our brown). *cahmuhaṭa'*KI, almost greasy color; *muhaṭa'*KI, greasy color, *sihsmuhaṭa'*KI, very greasy color; *stcu'kema smuhaṭa'*KI, very dark greasy color. This color designation applies to hues like our drab and fawn. An object less brownish than one described as *smuhaṭa'*KI is called *cahsmuhaṭa'*KI; if more brownish, it is called *sihsmuhaṭa'*KI. Some horses are greasy color. Pottery may deserve the designation if the firing is unsuccessfully accomplished. A mountain familiar to some Papago is Greasy mountain, *muhaṭa'*KI *to'a'*KI.

*Red. cahswe'*KI, almost red; *swe'ku*MI, reddish; *we'*KI, red; *sihswe'*KI, very red; *stcu'kema swe'*KI, very dark red. The Papago red is the color of the clay sediment which is used for paint. *we'*KI also means red paint. *swe'ku*MI, reddish, corresponds to several of our pinks. In songs, the evening is spoken of as

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*swe'ku*MI. *sicu'keme swe'*KI and *sevate'kame swe'*KI are both dark reds. The former is a blackish red while the latter is a wet red which looks black. Either color designation applies to the color of a horse, but the difference in meaning is understood.

The rain clouds in the west are *we'pe'*KI, *iceva'* KI red clouds.

Yellowish-Red (corresponds to our orange-red). *soamma swe'*KI, yellowish-red. This name was applied to two colored papers, one a dark shell pink, and one a bright scarlet, again illustrating the fact that neither value nor purity relationships are necessarily implied by the color designation. In its duller and darker variations the color name may be applied to a horse. A pottery vessel after firing is often *soamma swe'*KI.

Yellow (corresponds to our orange). *cahsoa*ME, almost yellow; *oa*ME, yellow; *sihsoa*ME, very yellow. This "yellow" is similar to California poppy color, a yellow-orange or even pure orange. *oa*ME is also the name of a paint, and therefore applies to much duller or grayer hues than standard orange. A sick person may be spoken of as having a yellow or "deadlike" complexion:

mumu'ku KE *si'oamah*
(He is) sick and became very yellow.

*Green. cahsiceta'*KI, almost green: *siceta'*KI, green; *sihsiceta'*KI, very green; *sicu'kema siceta'*KI, very dark green. Grass is *siceta'*KI, the distant scene and the ocean are *cahsiceta'*KI (or they are *skoma'*KI, gray), but some of the materials bought at the store, according to the women's opinions, are *sihsiceta'*KI. To judge by the examples chosen from among the colored papers, the Papago color names for green cover not only several degrees of light, medium, and slightly darker values, but also hues to be found within the green, yellow-green, blue-green, and blue color groups.

The Indian use of the word green to describe objects which to other observers are blue has often been cited. The green leaves of the corn plant are *siceta'*KI *haha'*KE, and an ear of corn of the blue kernel variety is also green, *siceta'*KI *hu*NI. Yet the two colors are not assumed to be identical, and no Papago would misunderstand the use of the color name in the last instance. *siceta'*KI may apply to objects which are varying degrees of bluish gray. A horse of that rather indefinite color is spoken of as being *sicete'kime'skoma*KI, gray-with-some-green-in-it, our greenish-gray. Of course, by comparison with grass or leaves, no horse is green to the Papago, but the usual word incorporates *siceta'*KI in its formation. A blue shirt, unmistakably a cobalt blue to one of the authors, was called *skoma'kime siceta'*KI, grayish green, equivalent to saying green-with-some-gray-in-it.

There are few objects aside from growing things which necessitate the use of green to describe them. In the old days nothing was dyed or painted green, nor was the color found among Papago basket materials. There are occasional green design motives in the modern baskets because the centre leaves of one of the plants used can be so cured as to preserve their color.

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blue," etc., to clarify the meaning. *valiksah* can be used with black (*stcu'kema svalihsaṭa'*KE), with yellow (*soamak sva'ihsaṭa'*KE), and with red (*swe'kimak svalihsaṭa'*KE), to describe a mixed color effect. Other grammatically possible combinations would seem senseless to the Papago as, for instance, a mixed color effect in which white predominated, (*stohama svalihsaṭa'*KE). Such a combination probably would be called gray (*skoma'*KI).

vayoh. (Sp., *albino* (?).) This name is given to different colors, some of them almost white. Applied to horses.

wuiloh. (Sp., *albino* (?).) Applied to horses that are white. If the Papago word is from the Spanish albino, it may refer to the color of the eyes. Some very white horses have peculiar eyes. When an Indian has trouble with his eyes, he is sometimes joked about their appearance. No Indian could be the same color as the horses to which *wuiloh* applies, but no matter how dark his skin, his eye trouble makes him *wuiloh.*

To sum up: Papago color designations indicate a limited need for color terminology in their everyday life. They seem to reveal, in addition, a rather obvious lack of what has been called nature appreciation in terms of color. A few of the examples cited to aid in the identification of a color designation were chosen from natural phenomena, but the fact that the majority of words apply to the color of horses and cows suggests the comparatively late development of color consciousness. Dolores believes that growth in this direction is the result of education and the increased availability of colored objects and materials.

There are several descriptive color names on the Papago list. It includes ashen, muddy, smoky, and greasy colors, but no combination equivalent to leaf or grass green, *ipahi* red, sky gray, or poppy yellow. Our word green, for example, covers hundreds of inter-gradations. These require for their identification not only modifiers like olive green or mustard green to show the preponderance of the blue or yellow hue constituents, but also various other modifiers which by analogy indicate relative degrees of value and purity. Parrot green, lettuce green, emerald, bottle, sea, oasis are typical examples of designations inspired by professional stylists. The more simple the system of color terminology, the greater the necessity that each designation be adequate to cover a range of differences in value and purity and that the term be sufficiently flexible to permit extensions of meaning.

The Papago recognise light colors in the formation of their designations by prefixing *cah-* meaning a little like, or almost. They also use a modifier to indicate the dark or blackish colors, and although they have no separate term connoting the brightness, purity, or intensity of a color, their prefix *sih-* in most instances identifies a hue as nearly pure. The majority of the Papago color designations, however, emphasize the value or light-to-dark variations.

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